

Developmental Immunology and Windows of Vulnerability to Asthma

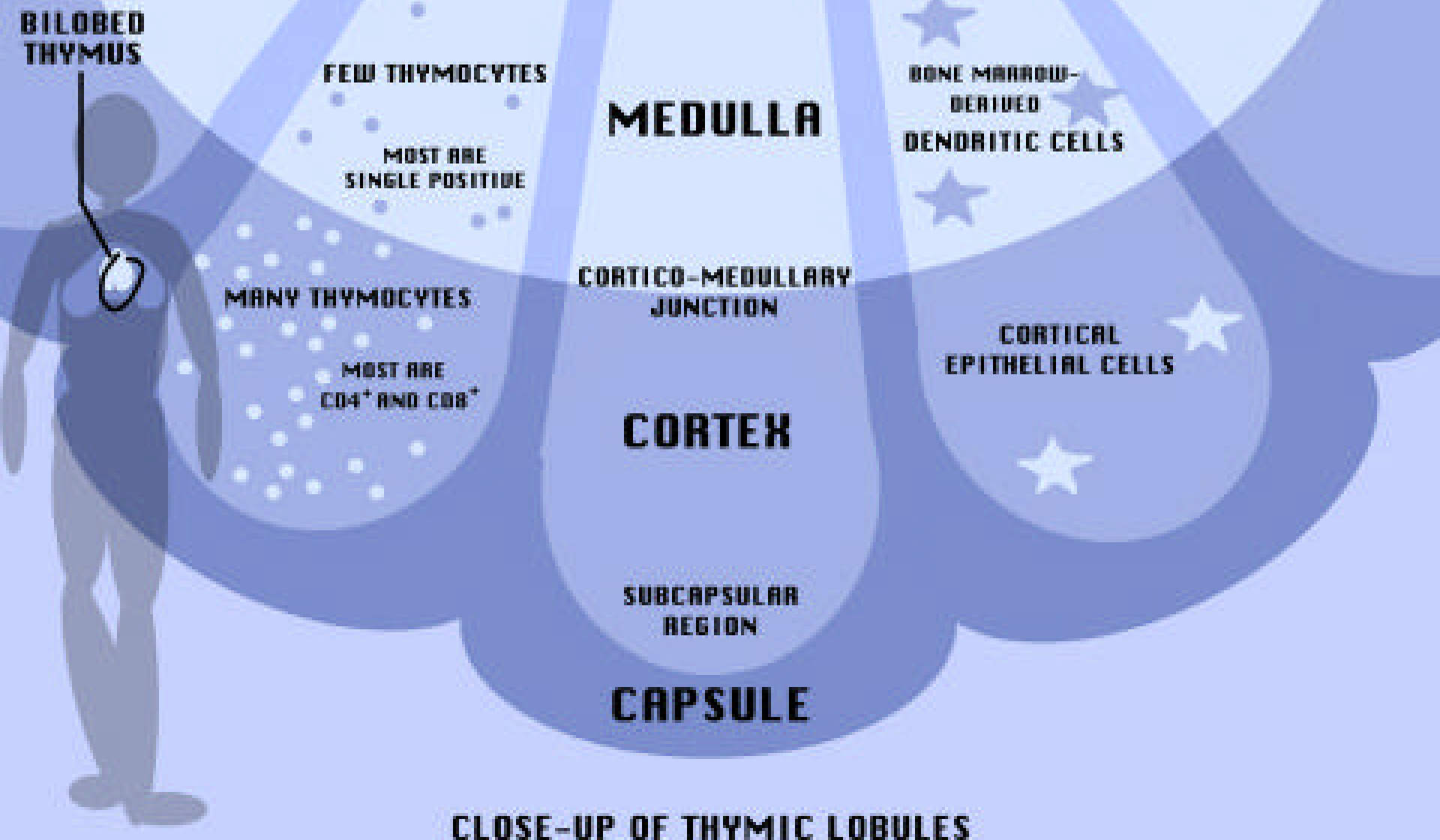
John M. Armstrong, Ph.D.
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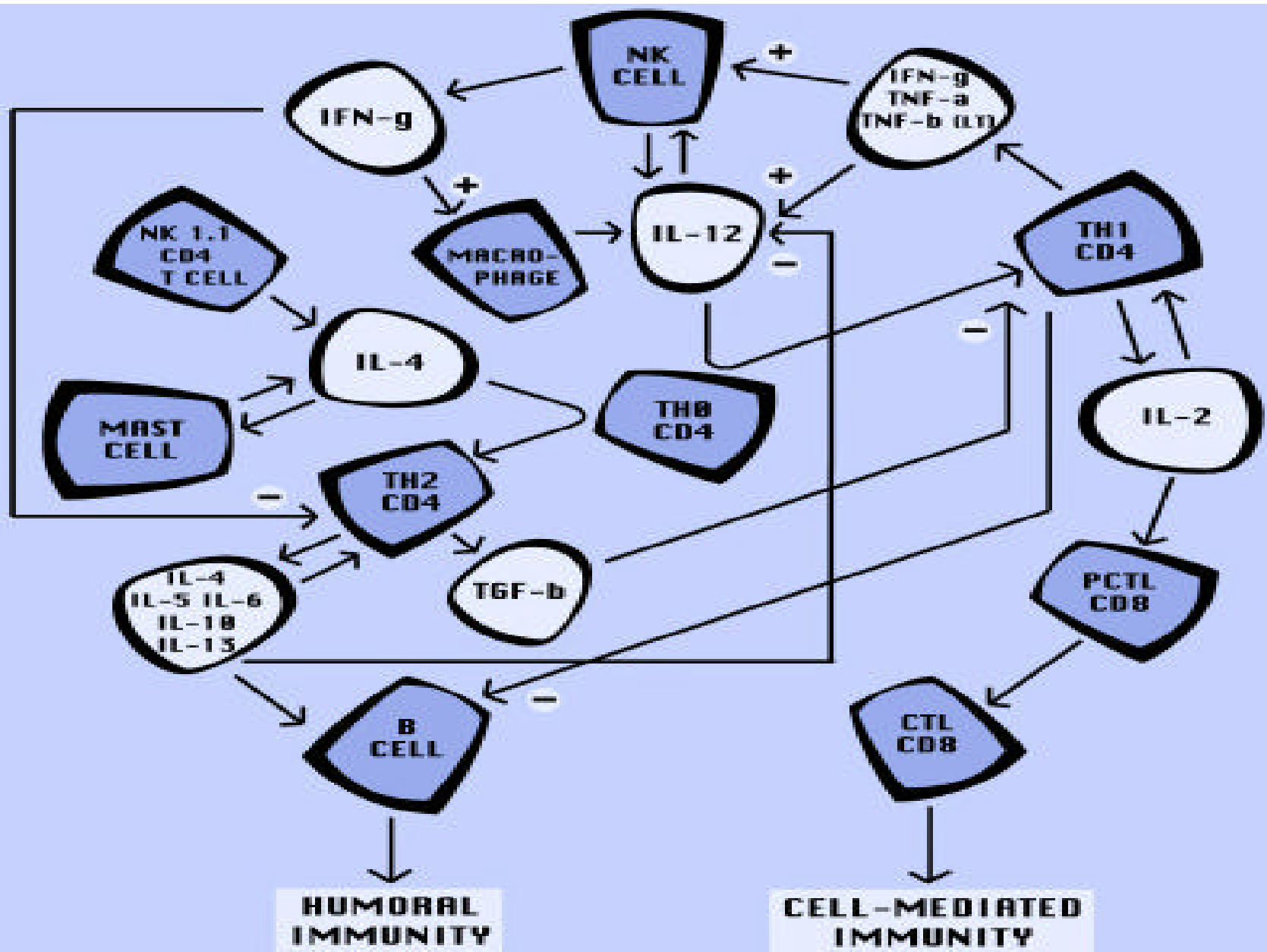


Asthma

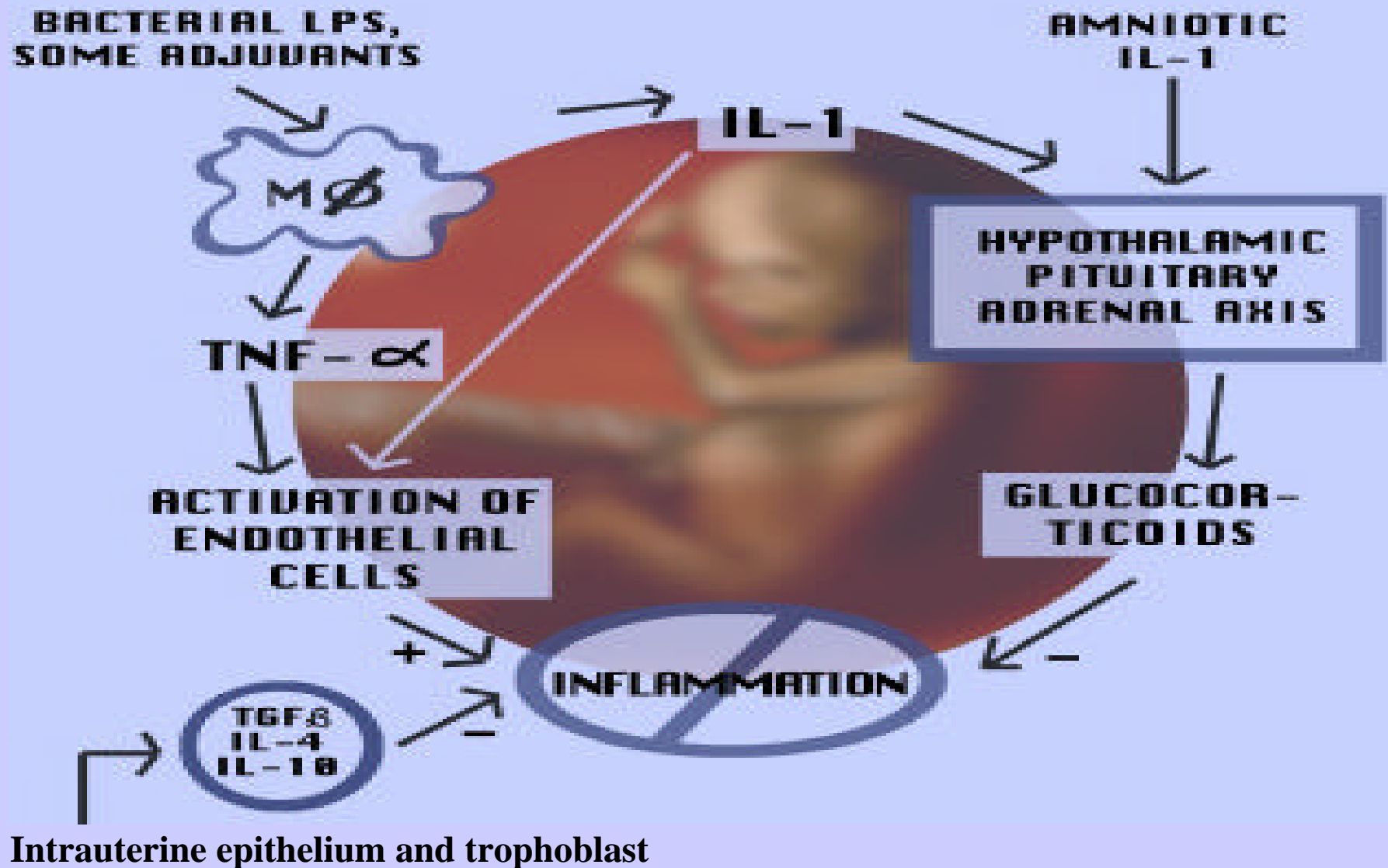
- Symptoms
- Background
- Exacerbating factors
- Pathology
- The Immune Response

THE THYMUS





The Fetus Promotes an Immunosuppressive Response in the Mother



Potentially asthma-associated toxicants

- **Pesticides**

- Chlordane

- Toxaphene

- Hexachlorobenzene

- **Heavy metals**

- Lead

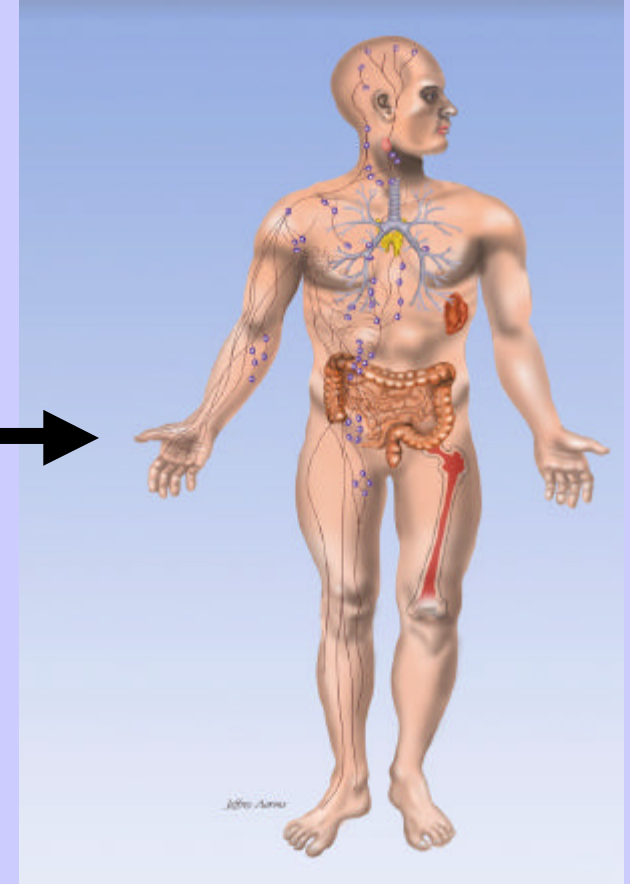
- Mercury

- **Industrial chemicals**

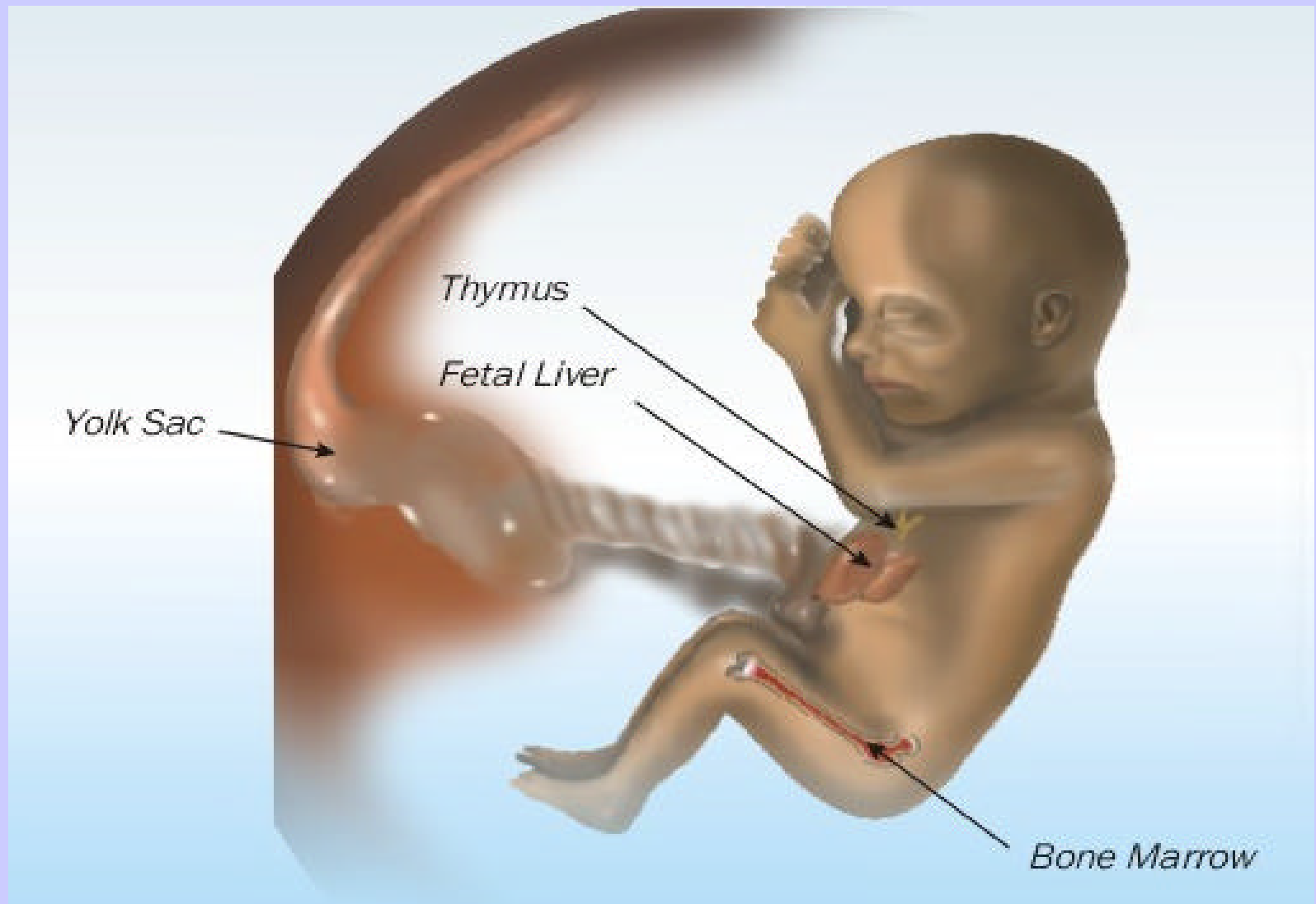
- Dioxins

- PCBs

Timelines of Immune Development



The Fetal Period



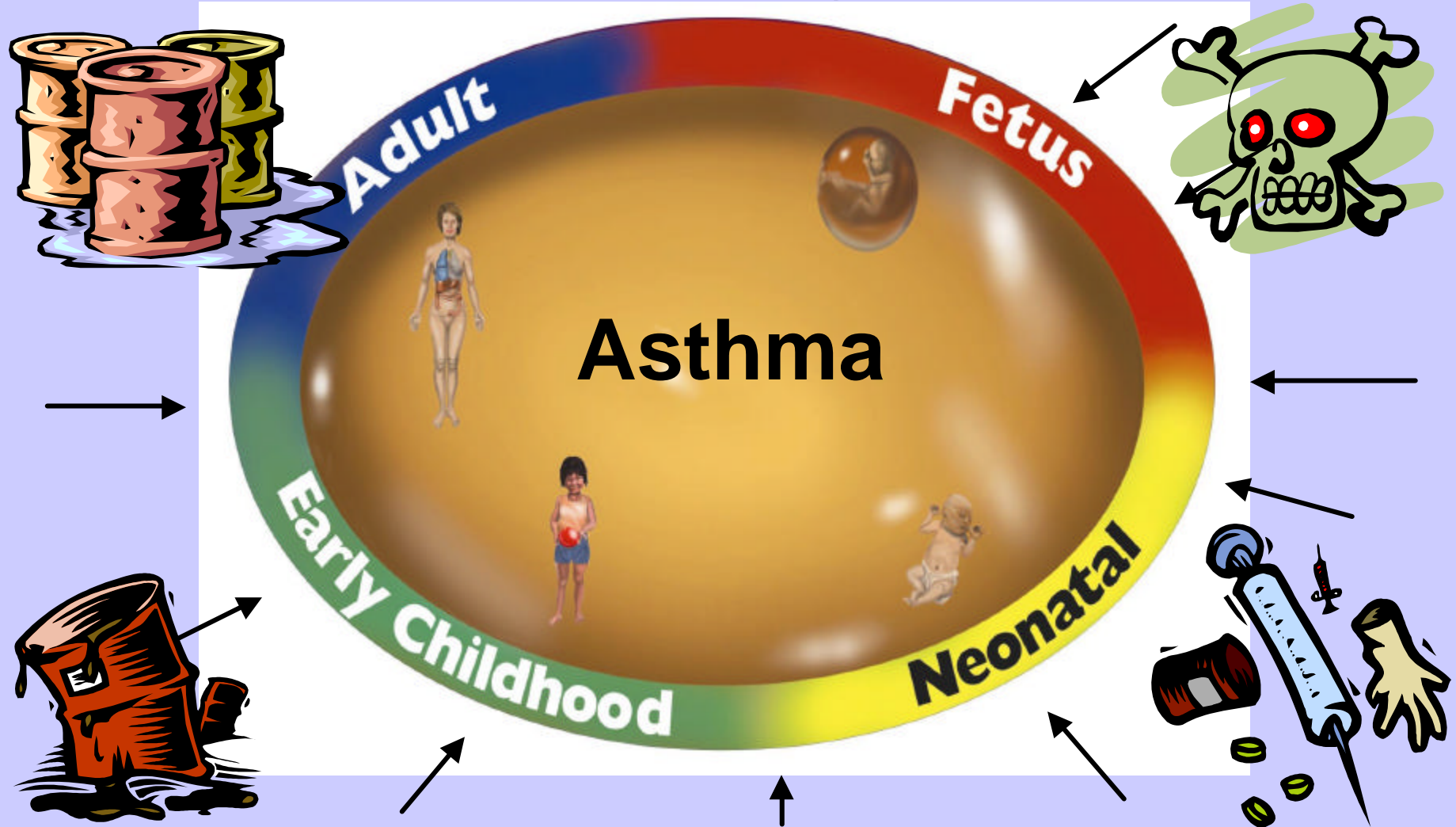
The Neonatal Period



Early Childhood



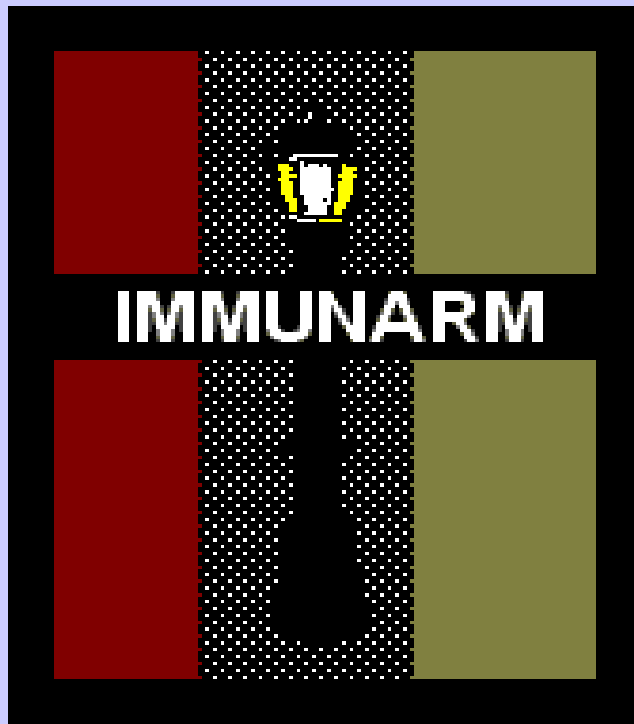
Potential Windows of Vulnerability to Environmental Toxicants During Immune Development



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